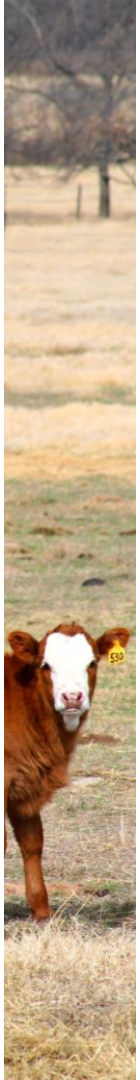


Can Cattle Handling Affect Morbidity

Ron Gill, Ph.D.

Texas AgriLife Extension Service

College Station, TX

3rd Annual TVMDL Amarillo
BOVINE RESPIRATORY DISEASE
Conference

Bovine respiratory disease (BRD)

- The most common disease among feedlot cattle in the United States.
- BRD accounts for ~ 75% of feedlot morbidity
- BRD accounts for 50% to 70% of all feedlot deaths
- Majority of deaths due to BRD occur shortly after arrival or within the first 45 days
- About 91% of calves diagnosed with BRD were diagnosed within the first 27 days after arrival.

(Edwards, 1996; Galyean, Perino, and Duff, 1999; Loneragan et al., 2001; Buhman et al. (2000))

Bovine respiratory disease (BRD)

- BRD causes an estimated $800 million to $900 million annually in economic losses from death, reduced feed efficiency, and treatment costs
- Medicine costs accounted for 21% of the decrease
- 79% was attributable to lower carcass weight (8.4% less) and lower quality grade (24.7% more USDA Standard quality grade carcasses).

(Chirase and Greene, 2001)

Bovine respiratory disease (BRD)

- A Texas Ranch-to-Rail study found BRD morbidity accounted for 8% higher production costs,
  - not including losses related to decreased performance.
- Cattle diagnosed with BRD had a 3% decrease in gain compared with healthy cattle and cost the program $111.38 per sick animal.

(Griffin, Perino, and Wittum, 1995)

Why is BRD such an issue?

- Genetics
- US beef production system
- Vaccination failure
- Nutrition
- Stress
- Management of incoming cattle

Why is BRD such an issue?

- Reliance on antibiotics to “manage the situation”
- Lack of a holistic approach to managing stress

The US Beef Production Model

- Fragmented
  - 45% of calves produced in herds of less than 100 cows
- Environmental extremes
  - Florida to Nevada
  - Canada to Mexico
- Throw them together in the middle of the country and see what happens

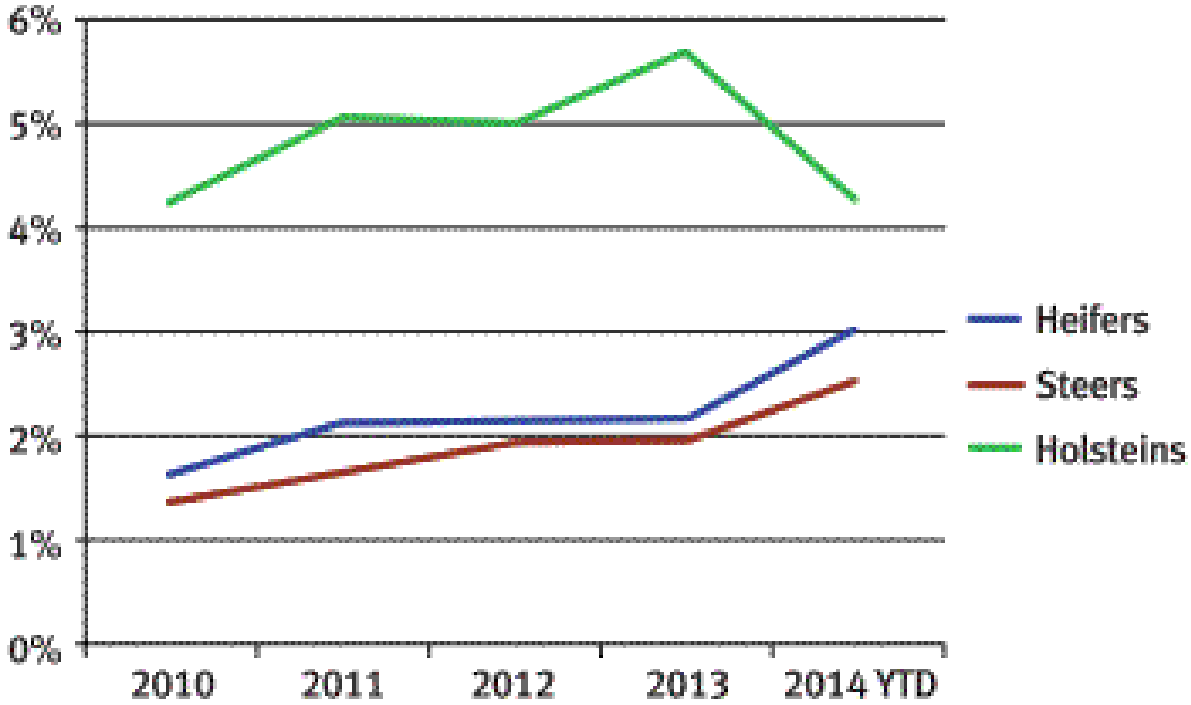
What are our Big Breakthroughs?

- Weaning 45 days helps some
- Vaccination protocols help
  - VAC 45
  - VAC 34
  - VAC 24
- Antibiotics

What are our Results?

- No decrease in BRD across the industry
- No decrease in Morbidity
- No decrease in Mortality
- Increased cost of production

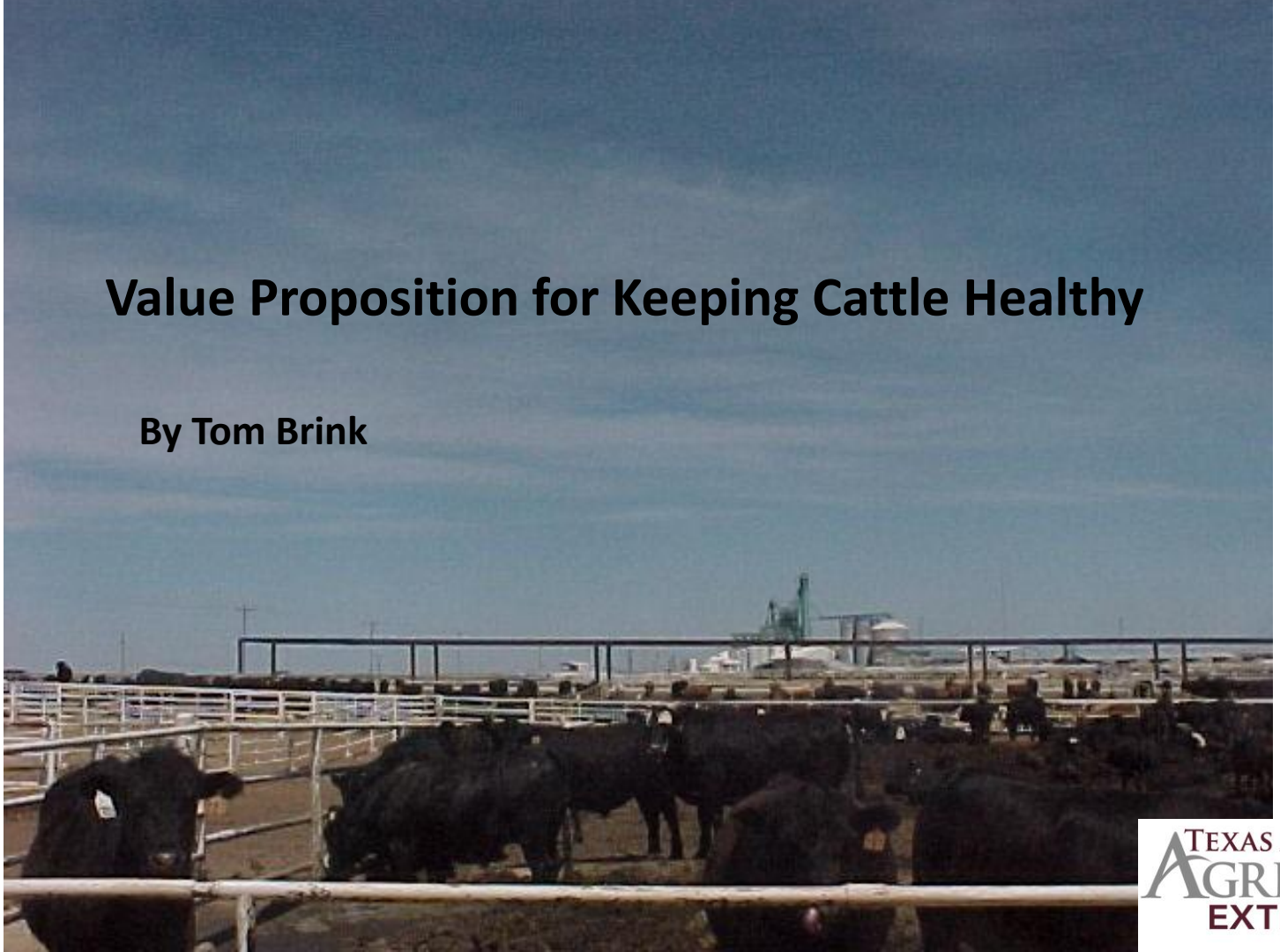
Fig. 1: Death loss



Source: *Feedyard death loss continues to rise, Professional Cattle Consultants (PCC) newsletter, May 27, 2014.*

Value Proposition for Keeping Cattle Healthy

By Tom Brink



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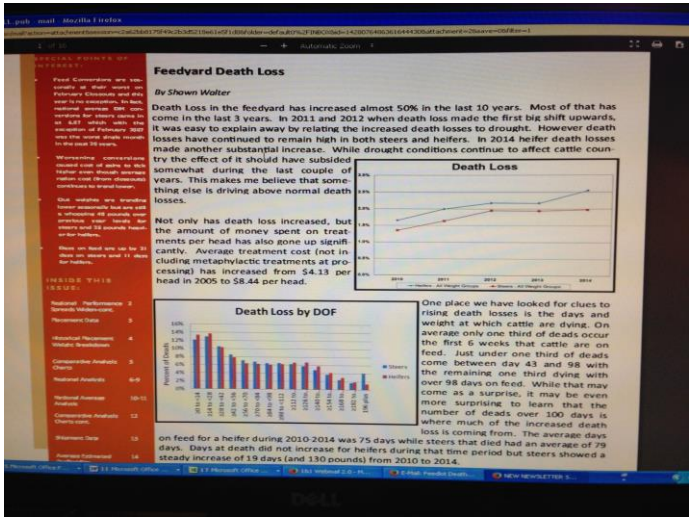
“Death loss in feedyards has increased almost 50% in the last 10 years. Most of that has come in the last 3 years. In 2011 and 2012, when death loss made the first big shift upwards, it was easy to explain away by relating the increased death losses to drought.

However death losses have remained high in both steers and heifers. In 2014, heifer death losses made another substantial increase. While drought conditions continue to affect parts of cattle country the effect of it should have subsided somewhat by now. This makes me believe that something else is driving above normal death.”

---Shawn Walter,
PCC

April 2015



Feedyard Death Loss

By Shawn Walter

Death Loss in the feedyard has increased almost 50% in the last 10 years. Most of that has come in the last 3 years. In 2011 and 2012 when death loss made the first big shift upwards, it was easy to explain away by relating the increased death losses to drought. However death losses have continued to remain high in both steers and heifers. In 2014 heifer death losses made another substantial increase. While drought conditions continue to affect cattle country the effect of it should have subsided somewhat during the last couple of years. This makes me believe that something else is driving above normal death losses.

Death Loss

Not only has death loss increased, but the amount of money spent on treatments per head has also gone up significantly. Average treatment cost (not including metaphylactic treatments at processing) has increased from $4.13 per head in 2005 to $8.44 per head.

Death Loss by DOF

One place we have looked for clues to rising death losses is the days and weight at which cattle are dying. On average only one third of deads occur the first 6 weeks that cattle are on feed. Just under one third of deads come between day 43 and 98 with the remaining one third dying with over 98 days on feed. While that may come as a surprise, it may be even more surprising to learn that the number of deads over 100 days is where much of the increased death loss is coming from. The average days on feed for a heifer during 2010-2014 was 75 days while steers that died had an average of 79 days. Days at death did not increase for heifers during that time period but steers showed a steady increase of 19 days (and 130 pounds) from 2010 to 2014.

When things go really, really wrong…

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Would you like to own these feedyard cattle?

Lot 8412 47% pulled once 19% pulled twice
2 dead (113 head total)

Lot 8413 53% pulled once 21% pulled twice
4 dead (117 head total)

Un-weaned calves @45 days on feed in TX.

TEXAS A&M AGRILIFE EXTENSION

Would you like to own these feedyard cattle?

Final death loss was 9.5%

Financial loss = $458.05 per head

Buy/sell on these cattle was “right” by nearly $150 per head.

This is “where we are” at today’s market values. Death loss risk is enormous!

TEXAS A&M AGRILIFE EXTENSION

You buy a group of 600-lb. steers to put on feed.

What are the odds you'll experience death loss of 5% or more?

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You buy a group of 600-lb. steers to put on feed.

What are the odds you'll experience death loss of 5% or more?

Answer = 21%

(24% on heifers)

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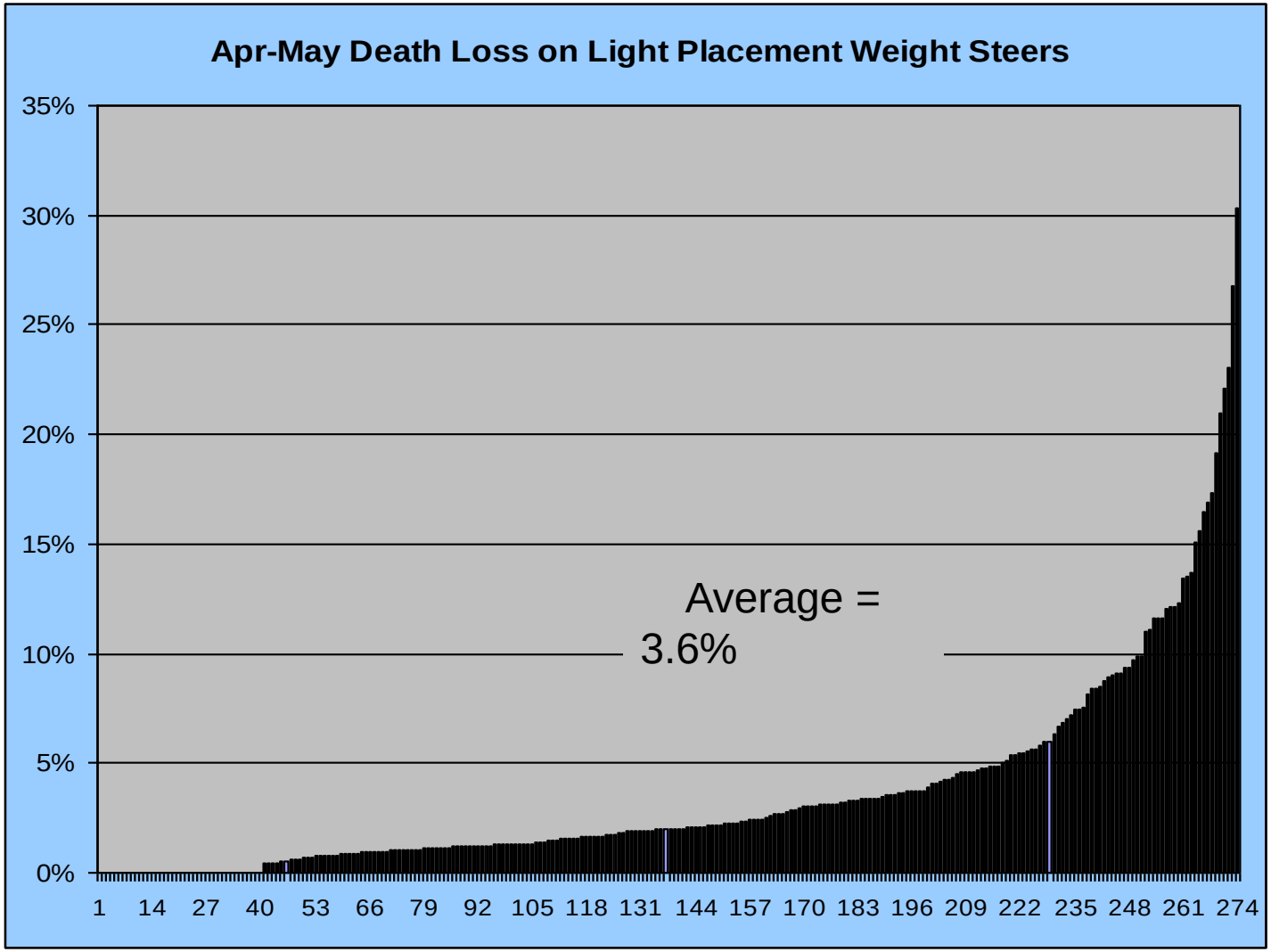
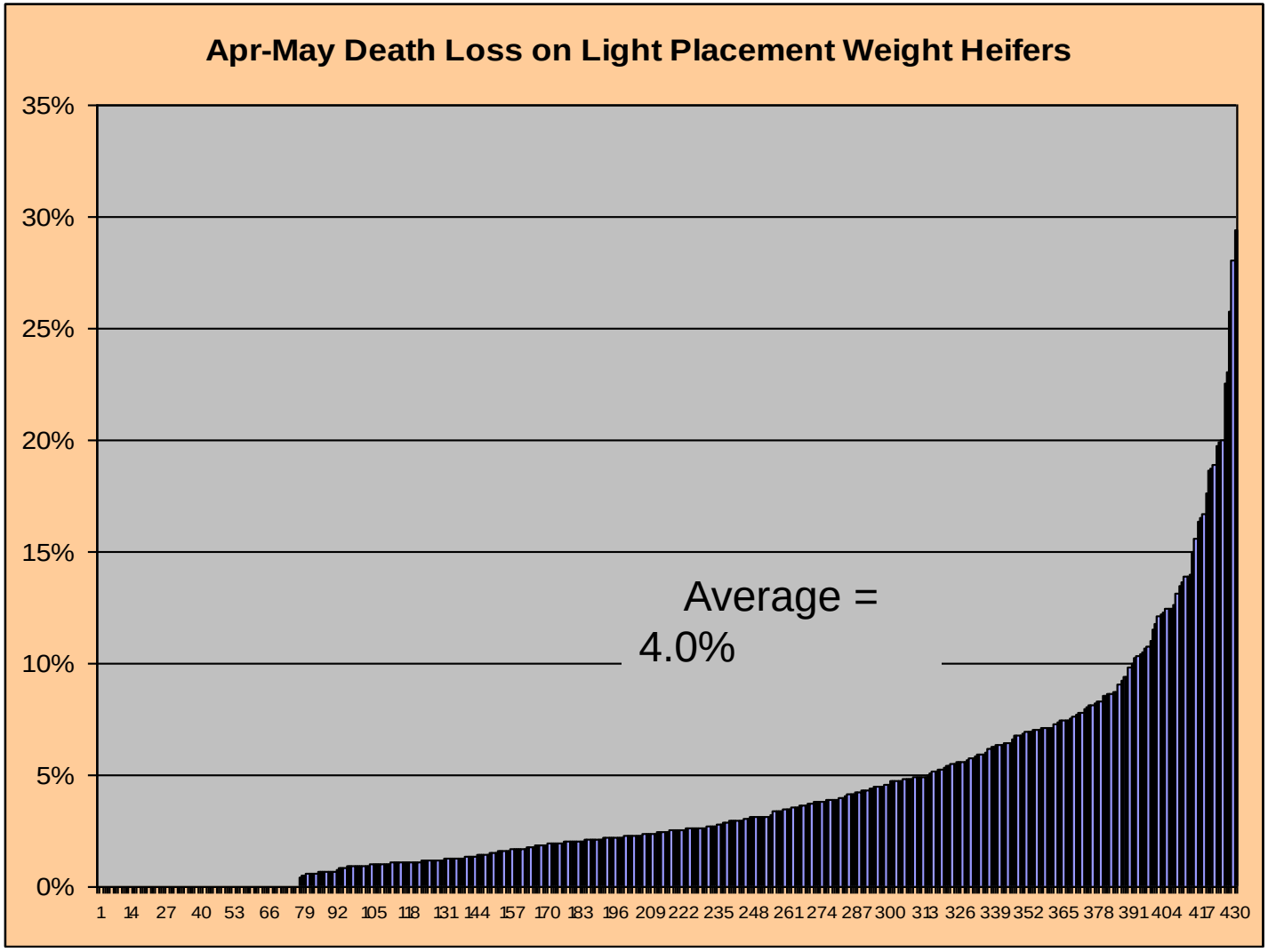


TEXAS A&M AGRILIFE EXTENSION



TEXAS A&M AGRILIFE EXTENSION

Steer Groups	Average Death Loss	Loss Per Head
0% to 3%	1.2%	$0
3% to 5%	3.9%	($112)
5% to 10%	7.4%	($318)
>10%	16.1%	($1,431)

BASE

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Market competition is causing calf buyers to assume greater price risk ***AND*** greater health risk.

TEXAS A&M AGRILIFE EXTENSION

Where we are: Conclusion

- Health has never been more important than it is today.
- Evidence is that sickness and death loss is getting worse in feedlots
- Death loss is more costly than ever before; financial risks are enormous
- Our VAC programs are having a positive impact and are partially rewarded

- We need new ideas and new approaches

The End

tom@topdollarangus.com 303-478-4331

AgriLIFE EXTENSION
Texas A&M System

“We need new ideas and new approaches”

- What might be some “new ideas” or “new approaches” to managing BRD?
- Can handling make a difference?

Why is BRD such an issue?

- Reliance on antibiotics to “manage the situation”
- Lack of a holistic approach to managing stress

What are the major stressors in a calf's life?

- Birth
- Climate
- ”Branding”
- Weaning
- Transportation
- Marketing
- Co-mingling
- Transportation

*Last 4 could repeat 2X

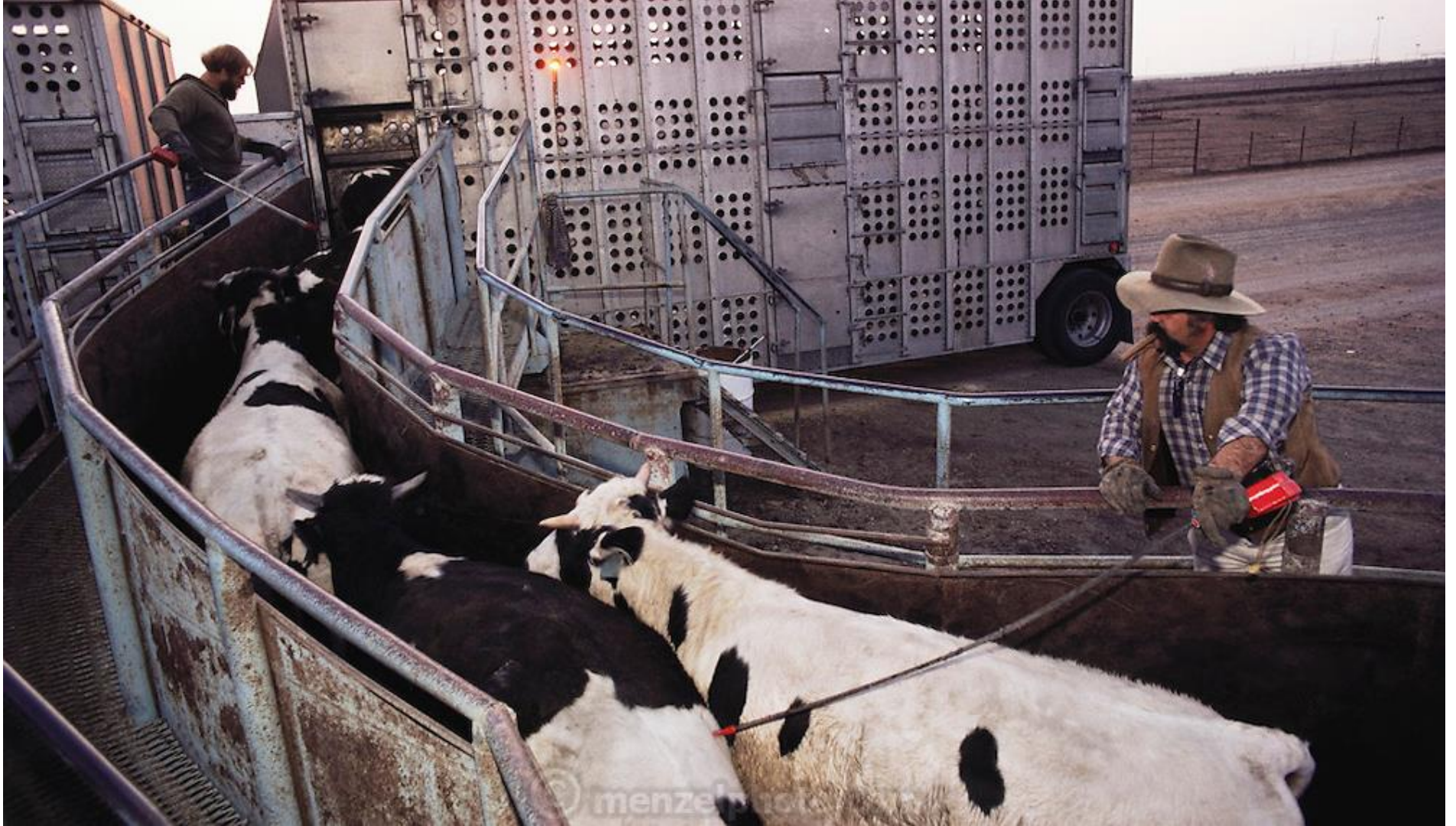
TEXAS A&M AGRILIFE EXTENSION

What is the common denominator in all of those?

YouTube – How to Use A Hot Shot by Harry Youren

TEXAS A&M AGRILIFE EXTENSION

What is the common denominator in all of those?



Why is BRD such an issue?

- You can’t control genetics…yet
- You can’t control transportation completely
- Marketing channels are difficult to control

What can we do?

- Control the Human Animal Interaction (HAI)

What can we do?

- Beginning in the early 1990's discussions began regarding impact of the human animal interaction (HAI) on health of cattle.
- Bud Williams contended that through his handling methods that morbidity and mortality could be reduced in high risk cattle.
- His personal experiences in managing freshly weaned calves entering a feedlot were used as examples of how the impact of the HAI could reduce stress and enhance immune system function

What work is going on in this area?

- As early as 2000 Heartland Cattle Co, McCook, NB had started acclimating cattle upon arrival and “exercising” cattle throughout the feeding period as reported by Wilson (2006).
- Howell, a researcher at Kansas State attempted to study the impact of exercise on incoming cattle by a prescribed free exercise regimen and saw no impact on performance or carcass traits but states, there was a positive impact on health from exercise.

Effects of Temperament and Acclimation to Handling on Reproductive Performance of Bos taurus Beef Females
(R. F. Cooke et al., Oregon State University)
J. Anim. Sci. (2012) 90:3547-3555

- Exp. 1
- 433 multiparous, lactating Angus × Hereford cows were sampled for blood and evaluated for temperament
- Cow temperament was assessed by chute score and exit velocity.
- Chute score was assessed on a five-point scale according to behavioral responses during chute restraining.

Effects of Temperament and Acclimation to Handling on Reproductive Performance of Bos taurus Beef Females

- Plasma cortisol concentrations were greater in cows with aggressive temperament.
- Cows with aggressive temperament had reduced
  - pregnancy (95% = adequate and 89% = aggressive)
  - calving rate (92% adequate and 85% aggressive)
  - Had reduced weaning rate
- Pound of calf weaned per cow reduced in aggressive cows.
  - (491 pounds = adequate and 455 pounds = aggressive)

Effects of Temperament and Acclimation to Handling on Reproductive Performance of Bos taurus Beef Females

- Exp. 2
- 88 Angus × Hereford heifers (initial age = 206 days) were weighed (day 0 and 10) and evaluated for temperament score (day 10).
- On day 11, heifers were ranked by these variables and assigned to receive or not (control) an acclimation treatment.
- Acclimated heifers were processed through a handling facility three times weekly for four weeks (Mondays, Wednesdays and Fridays), whereas control heifers remained undisturbed on pasture.

Effects of Temperament and Acclimation to Handling on Reproductive Performance of Bos taurus Beef Females

- Puberty was hastened in acclimated heifers (60%) compared with control (38%).
- Results from this study indicate that
  - *B. taurus* beef cows with aggressive temperament have impaired reproductive performance compared with cohorts with adequate temperament,
  - Acclimation to human handling after weaning hastens reproductive development of replacement heifers.

What work is going on in this area?

- Shepherd, J. (2010) manager of Cattlemen's Choice Feedyard, Inc. (CCFI), says
- "making a point to exercise newly arrived cattle has improved feed and water intake, increased gain and decreased pulls.
- The program of handling and exercising is not prescribed but adapted to fit each newly arrived set of cattle".
- The actual protocol options for handling were not defined.

What work is going on in this area?

- Gerlach (2014) looked at the impact of forced exercise on performance
- He saw a decrease in gain due to the exercise program being used but did not report impact on health of the cattle
- But did conclude that routine exercise could potentially improve the health and reduce the stress response of feedlot cattle by decreasing blood insulin and cortisol concentrations

What work is going on in this area?

- Daigle (2017) used two types of exercise in comparison to control pens with no added exercise.
- Besides a free exercise program they also used a forced exercise regimen in their study.
- They also looked at performance but did not report impact on morbidity or mortality.
- Forced exercise decreased gains

What work is going on in this area?

- Woolsoncroft (2018) looked at a forced exercise routine compared to a no exercise treatment
- Saw an increase in feed efficiency in the exercised cattle
- Reported a trend toward higher retreatment rates in cattle in the exercised treatment

What work is going on in this area?

- Work by Stokes (2014), looked at stress in cattle shipped from Hawaii to the US mainland and on to Texas feedyards
- Showed that transit time in trucks or ships was not as stressful as the process of being handled by humans during loading and unloading.
- Leaving the cattle in their shipping containers and hauling with ships or trucks was less stressful than loading and unloading.

So…are the stressors actually the activities outlined earlier or the HAI associated with them?

- Acclimation of cattle to facilities and handling have been shown to increase
- Onset of puberty in acclimated heifers (60%) compared to controls (38%)
- TAI conception rate 10% higher in acclimated heifers

What can be done to alleviate some stress?

- Holistic approach begins at the ranch of origin
- Effective stockmanship principles adopted for handling
- Cows and calves are taught to be handled and to take stress
- Weaned on the ranch of origin (VAC – 45) if possible
  - "Weaned 45 days or 45 minutes"
- Marketed through facility or process to manage

What can be done to alleviate some stress?

What can be done to alleviate some stress?

- Train people how to easily load cattle
  - Trucking BQA training
- Acclimate (settle) at first unloading at order buyer or final destination.
- Acclimate cattle to receiving pen to ensure intake of feed and water.
- Train processing crews to effectively handle cattle

Personal experience not controlled experiment

Gill Cattle Company Preconditioning Operation
Mineral Wells, Texas

TEXAS A&M AGRILIFE EXTENSION

Effects of Acclimation to Handling on Health and Performance of High Risk 500 lb. Heifers

- Heifers were purchased in East Texas auctions
- Accumulated over a 5 day period by order buyer
- Delivered 30 miles to precon facility
- Receiving protocol was
  - Off truck on to feed and water
  - Process next morning
  - Mass treat
  - Held in receiving pen
  - Pull and treat after 3 days
  - Revac in 14 days
- Used in Cutting horse training after 21 days

TEXAS A&M AGRILIFE EXTENSION

Effects of Acclimation to Handling on Health and Performance of High Risk 500 lb. Heifers

- Used in Cutting horse training
  - after 21 days
  - for 2 weeks
- Back to traps and self feeders for 2 weeks
- Sent to Feedyard

Effects of Acclimation to Handling on Health and Performance of High Risk 500 lb. Heifers

- Performance of Heifers
  - 2.60 ADG over 60 days
  - 2.7% Death Loss
  - 0.2% Chronics

Texas A&M AgriLife Extension

Effects of Acclimation to Handling on Health and Performance of High Risk 500 lb. Heifers

- Revised Receiving protocol:
  - Off truck “Acclimation to handling”
    - Avg. 15 Minutes
  - Moved to feed and water “Acclimation as needed”
    - Avg. 5 Minutes
  - Moved back to Holding Pens next morning
  - Repeat “Acclimation”
    - Avg 3 minutes
  - Process and Mass treat
    - Acclimate if needed following treatment
  - Return to receiving pen
  - Pull and treat after 3 days

Texas A&M AgriLife Extension

Effects of Acclimation to Handling on Health and Performance of High Risk 500 lb. Heifers

- Performance of Heifers After Acclimation Started
  - 2.90 ADG over 60 days
  - 0.7% Death Loss
  - 0.0% Chronics
- Complaints by owners that cattle were too fleshy and weighed to much
- Accused us of implanting and feeding ionophores.

Difference between research result and practical experience?

- Research has not been able to find a positive link between ”exercise” and health
- Operations trained in low-stress stockmanship do see a positive response
- Why the difference?

Difference between research result and practical experience?

- Research protocols require cattle to be allocated to treatment groups based upon some set of criteria to minimize variation.
- It takes a few days to over a week to assess the cattle to determine their treatment group assignments
- Most of the benefit to low-stress handling will occur in the first minutes to hours of HAI upon arrival.
- Most research faculty do not understand the low-stress handling process

Benefits of Acclimation Using Low-Stress Stockmanship Techniques

- Establishes a positive HAI causing cattle to relax
  - Allows lameness and sickness to be expressed and detected
- Stops the panic movement in the receiving pen
  - Gets cattle on water quicker
  - Moves cattle to the feed source quicker
  - Greatly reduces the risk of injury and death from running into fences
- Allows cattle to rest sooner and longer

What kind of time investment is needed to see benefit?

- Revised Receiving protocol:
  - Off truck “Acclimation to handling”
    - Avg. 15 Minutes
  - Moved to feed and water “Acclimation as needed”
    - Avg. 5 Minutes
  - Moved back to Holding Pens next morning
  - Repeat “Acclimation”
    - Avg 3 minutes
  - Process and Mass treat
    - Acclimate if needed following treatment
  - Return to receiving pen
  - Pull and treat after 3 days

As and industry, what needs to happen?

- Refocus efforts to control BRD
- Investment in training in low-stress stockmanship principles and techniques, particularly for high-risk calves
- Commitment to change

Trying to implement changes in handling

- Extremely difficult to do
- May require re-manning
- Requires a commitment

TEXAS A&M AGRILIFE EXTENSION

Never argue with an idiot they will bring you down to their level and beat you with experience!

"Never argue with an idiot, because people watching may not be able to tell the difference."

TEXAS A&M AGRILIFE EXTENSION

"Change is the price of survival." ~ Winston Churchill

Change is not required,
survival is not mandatory
~ Deming

Texas A&M AgriLife Extension

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